

Advanced treatment

Experimental process could be watershed for cleanup of ground-water

By Laurence Darmiento
STAFF WRITER

BALDWIN PARK — On a dusty, gravel-covered lot just south of the Santa Fe Dam, a corrugated metal building and a small wooden trailer sit beneath a towering water tank.

It hardly merits a second glance. Except that the homely complex houses what may be an unexpected breakthrough in the early effort to remove perchlorate from the eastern San Gabriel Valley's water supplies.

Perchlorate is a chlorine derivative added to rocket fuel and munitions; it is a toxic chemical that can harm the thyroid gland.

Discovered in June at potentially harmful levels, perchlorate is being treated through a pilot program at the treatment facility, which originally was built to deal with the Valley's existing problem with industrial solvent pollution.

Over the past few weeks, said officials who operate the facility, tests on water with perchlorate levels far above state drinking-water standards have shown that the treatment process reduced levels of the chemical to 7 parts per billion. That level is considered safe.

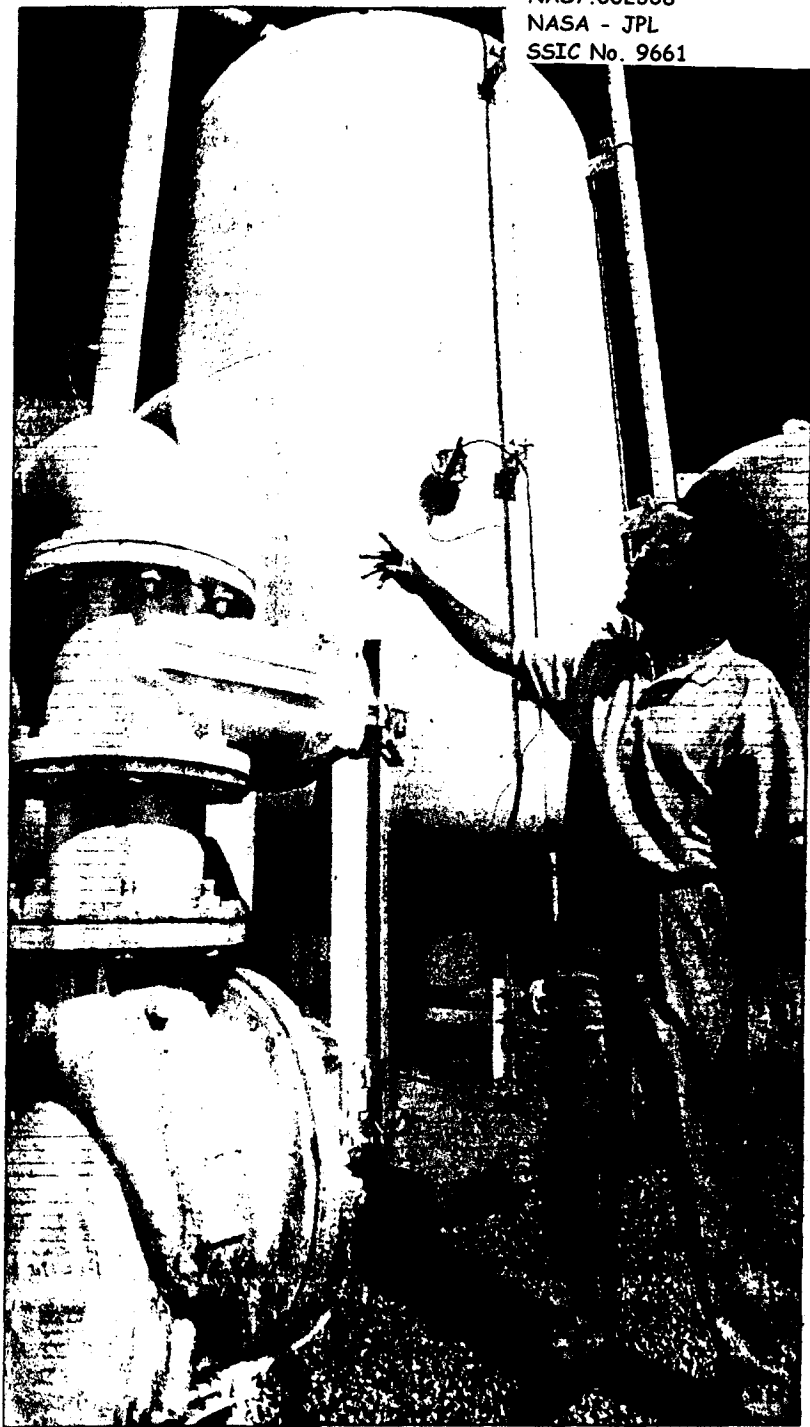
"We are not getting any water at the end of the process that exceeds (state standards), and this system was in the ground before we even knew we had a perchlorate problem," said Reid Bowman, a chemist with Applied Process Technology, the Lafayette, Calif., corporation that developed the treatment.

Citing proprietary concerns, company officials would not reveal all the details of their process. But they outlined the primary steps of the treatment, called Advanced Oxidation, during a tour of the facility on Lante Street last week.

At its most basic level, the process involves ozone, which for years has been used to eliminate bacteria from water; hydrogen peroxide, which breaks down organic solvents; and carbon, which literally bonds with contaminants.

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Reid Bowman, a chemist with Applied Process Technology



REID BOWMAN, above, points to a carbon filtration system in Baldwin Park. Left, Bowman says the cleaning process still is not fully understood.

Staff photos
by JOHN FONTES

WATER

Process reduces toxic chemical

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The treatment starts in the corrugated metal building, where water is repeatedly injected and mixed with ozone and hydrogen peroxide. It is then tested for contaminants and pumped to a pair of 20,000-gallon tanks.

The tanks contain a slurry of granular carbon that filters the water, which is then re-tested and pumped into a 2 million gallon holding tank.

The system, which was refined when officials were trying to find a cheaper way to treat industrial solvents in the well water, has been active for less than two months.

Company officials said it's unclear exactly how the perchlorate is being reduced to levels below the state standard of 18 parts per billion.

Bowman would not release precise figures, but he said the reduction is not the direct result of the ozone and hydrogen peroxide treatment of the water.

Rather, he said, it appears to be a reaction stimulated by the chemicals in the filtration tank at the last stage of the process.

"We don't really know what is going on," he said, noting several chemists are studying the process. "Understanding the fundamental chemistry is important, but what is more important is determining this is a viable process."

The pilot program is sponsored by the Valley County Water District, which owns the

well, the land and some of the facilities, and the San Gabriel Basin Water Quality Authority.

The 20,000-gallon filtration tanks were being used alone to remove the solvents, but the process resulted in \$140,000-a-month costs to replace the carbon, said Barbara Ware, general manager of the Valley County Water District.

The new treatment process was designed to reduce the levels of solvents in the water before reaching the filtration tanks so the carbon can last far longer, she said.

State health officials said they are not aware of the new results.

Preliminary tests on the system when it began earlier this summer were not as promising, said Gary Yamamoto, chief of the area's drinking water operations for the state Department of Health Services.

"We have not been provided the recent data (on perchlorate). That was not something we were looking for," he said. "We would be very happy if that were a solution to the problem."

Also unaware of the results is a committee of companies named responsible by the Environmental Protection Agency for polluting the Valley with industrial solvents.

The companies have petitioned the EPA for a delay in the development of a large-scale treatment facility for solvents as a result of the newly found perchlorate contamination.

"It's promising information, and it's something worth following up on," said steering committee spokesman David Giannotti, an attorney for Huffy Corp. "I would love to think we have found the magic elixir. That would be terrific news."

The perchlorate contamination was discovered in June,

mostly in wells in the Baldwin Park area, in tests conducted by state health officials. The testing has shut down several wells, including all three operated by the La Puente Valley Water District.

The testing was ordered in Valley water supplies after perchlorate was discovered in drinking water near a Sacramento-area rocket engine plant operated by AeroJet, which has a second facility in Azusa.

The company denies it is responsible for the pollution, saying its local plant has not produced rocket engines since the early 1960s and the site was the home of a munitions facility during World War II.

The steering committee companies, including AeroJet, have thus far committed themselves to an alternate, biological technology to treat the perchlorate that utilizes micro-organisms.

Plans call for the construction in coming months of a pilot biological treatment plant near Sacramento and then, if test results warrant, developing a larger treatment plant locally.

Giannotti said both processes must maintain effectiveness as the quantity of water is gradually increased to a volume great enough to dent the Valley's water problem.

The Lante Street treatment plant is being operated four to six hours every other day, treating 1,000 gallons a minute. Water quality officials plan to build a large-scale, solvent-treatment plant over the next few years that could treat 20,000 gallons per minute.

Bowman said the company plans to increase gradually the quantity of water treated as it perfects the process and is given approval by state health officials.